The documentation and process conversion measures necessary to comply with this revision shall be completed by 24 September 2003.

INCH-POUND

MIL-PRF-19500/463F
24 June 2003
SUPERSEDING
MIL-S-19500/463E
12 October 1997

PERFORMANCE SPECIFICATION

SEMICONDUCTOR DEVICE, DIODE, SILICON, CURRENT REGULATOR,
TYPES 1N5283-1 THROUGH 1N5314-1, AND 1N5283UR-1 THROUGH 1N5314UR-1
JAN, JANTX, JANTXV, JANS, JANHC, AND JANKC

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the performance requirements for 100 volt, silicon, current regulator diodes. Four levels of product assurance are provided for each encapsulated device type as specified in MIL-PRF-19500. Two levels of product assurance are provided for each unencapsulated device type.

1.2 Physical dimensions. See figure 1 (DO-7), figure 2 (DO-213AB), and figure 3 (JANHC and JANKC).

1.3 Maximum ratings. Maximum ratings are as shown in maximum test ratings (see 3.10) and as follows:

a. P_T = 500 mW (DO-7) at T_L = +50°C, L = .375 inch (9.53 mm); both ends of case or diode body to heat sink at
L = .375 inch (9.53 mm). (Derate to 0 at +175°C).

b. P_T = 500 mW (DO-213AB) at T_{EC} = +125°C. (Derate to 0 at +175°C).

c. -65°C ≤ T_j ≤ +175°C; -65°C ≤ T_{STG} ≤ +175°C.

1.4 Primary electrical characteristics. Primary electrical ratings are as shown in maximum test ratings (see 3.10) and as follows, (nominally 0.22 mA dc ≤ I_P ≤ 4.70 mA dc):

a. $R_{\Theta JL}$ = 250°C/W (maximum) at L = .375 inch (9.53 mm) (DO-7).

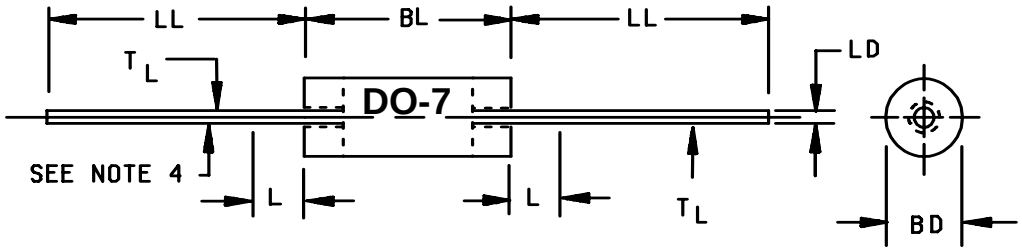
b. $R_{\Theta JEC}$ = 100°C/W (maximum) junction to end-caps (DO-213AB).

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Defense Supply Center, Columbus, ATTN: DSCC-VAC, P.O. Box 3990, Columbus, OH 43216-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

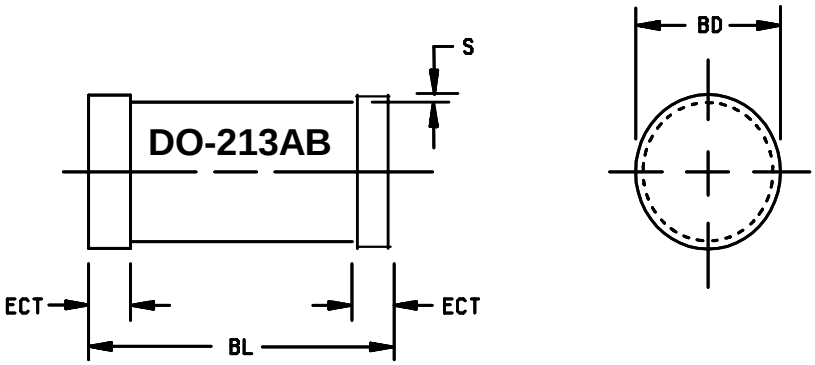
AMSC N/A FSC 5961



Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
BD	.085	.107	2.16	2.72	3, 4
BL	.230	.300	5.84	7.62	
LD	.018	.022	0.46	0.56	4,5
LL	1.000	1.300	25.4	38.1	

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. The minimum body diameter shall be maintained over .15 inch (0.38 mm) inch of body length.
4. The specified lead diameter applies in the zone between .050 inch (1.27 mm) and the end of the lead. Outside of this zone the lead diameter shall not exceed BD.
5. Both leads shall be within the specified dimension.
6. See 3.3 for L and T_L definitions.
7. Dimensions are in accordance with ASME Y14.5M.

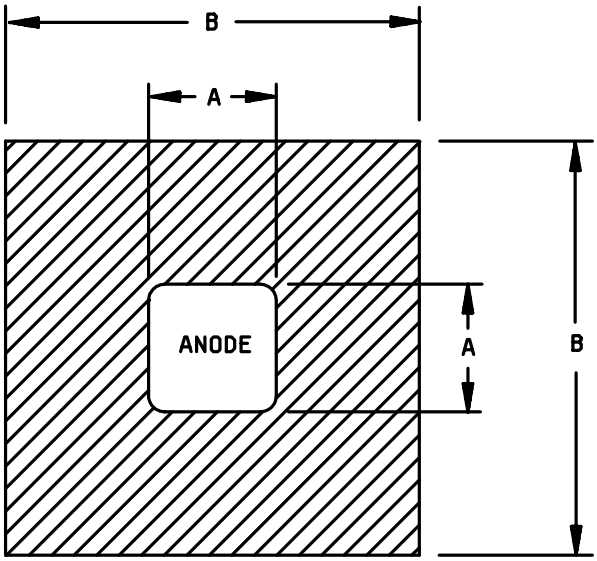
FIGURE 1. Physical dimensions (1N5283-1 through 1N5314-1).



Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BD	.094	.105	2.39	2.67
BL	.189	.205	4.80	5.21
ECT	.016	.022	0.41	0.55
S	.001 min		0.03 min	

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.

FIGURE 2. Physical dimensions (1N5283UR-1 through 1N5314UR-1).



Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	.012	.014	0.305	0.355
B	.026	.030	0.660	0.762

Design data

Metallization:
Top: (Anode) ..... Al.
Back: (Cathode) .... Au.
Al thickness ..... 25000 Å Min.
Gold thickness ..... 4000 Å Min.
Chip thickness ..... .010 ±.002 inch (0.254 ±0.0508 mm).

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.

FIGURE 3. Physical dimensions, JANHCA and JANKCA die.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATION

DEPARTMENT OF DEFENSE

MIL-PRF-19500 - Semiconductor Devices, General Specification for.

STANDARD

DEPARTMENT OF DEFENSE

MIL-STD-750 - Test Methods for Semiconductor Devices.

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Document Automation and Production Services (DAPS), Building 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 General. The individual item requirements shall be as specified in MIL-PRF-19500 and as modified herein.

3.2 Qualification. Devices furnished under this specification shall be products that are manufactured by a manufacturer authorized by the qualifying activity for listing on the applicable qualified manufacturer's list (QML) before contract award (see 4.2 and 6.5).

3.3 Abbreviations, symbols, and definitions. Abbreviations, symbols, and definitions shall be as specified in MIL-PRF-19500 and as follows:

L - Lead thermal path length. Lead thermal path length is the distance from the end of the diode body to the point of lead-temperature measurement. For purposes of this measurement, the same heat sinking at the same distance from the diode body shall be applied to each lead. No heat sinking shall occur between the diode body and the point of lead-temperature measurement. This measurement may be made from either end of the diode body. (The diode body includes slugs, if any, but does not include braze fillet, paint, etc., within the zone of uncontrollable lead diameter.)

T_L - Lead temperature. Lead temperature is the temperature of the lead measured at the lead thermal path length, L. Lead temperature shall be measured by means of a No. 30 copper-constantan thermocouple, or equivalent. All reference to T_L will be $T_{end\text{-}cap}$ for "UR" devices.

I_P - Pinch-off current. I_P Pinch-off current is defined as the regulator current at specified test voltage, V_S.

V_{POV} - Peak Operating Voltage. Peak operating voltage is the maximum voltage that shall be applied to the device.

P_D - Steady-state power dissipation. Power dissipated under steady-state conditions.

3.4 Interface and physical dimensions. Interface and physical dimensions shall be as specified in MIL-PRF-19500, and figure 1 (DO-7), figure 2 (DO-213AB), and figure 3 (JANHC and JANKC die) herein.

3.5 Dash one construction. These devices shall be of double plug construction utilizing high temperature metallurgical bonding between both sides of the silicon die and terminal pins. Metallurgical bond shall be in accordance with the requirements of category I or II in appendix A of MIL-PRF-19500.

3.5.1 JANS construction. Construction shall be dash one, category I or II metallurgical bond in accordance with appendix A of MIL-PRF-19500.

3.5.2 Encapsulant material. In addition to those categories of hermetically sealed package requirements specified in MIL-PRF-19500, fused-metal-oxide to metal shall also be acceptable.

3.6 Lead finish. Unless otherwise specified, lead finish shall be solderable in accordance with MIL-PRF-19500, MIL-STD-750, and herein. When solder alloy is used for lead finish, the maximum lead temperature is limited to 175°C maximum. Where a choice of lead finish is desired, it shall be specified in the acquisition document (see 6.2).

3.7 Marking. Devices shall be marked in accordance with MIL-PRF-19500.

3.7.1 Marking of UR version devices. For UR version devices only, all marking, except polarity (and serial number for JANS) may be omitted from the body, but shall be retained on the initial container.

3.8 Electrical performance characteristics. Unless otherwise specified herein, the electrical performance characteristics are as specified in 1.3, 1.4, and tables I and II herein.

3.9 Electrical test requirements. The electrical test requirements shall be the subgroups specified in table I herein.

3.10 Maximum test ratings. Test ratings shall be as shown in table II.

3.11 Workmanship. Semiconductor devices shall be processed in such a manner as to be uniform in quality and shall be free from other defects that will affect life, serviceability, or appearance.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. Qualification inspection (see 4.2).

b. Screening (see 4.3).

c. Conformance inspection (see 4.7).

4.2 Qualification inspection. Qualification inspection shall be in accordance with MIL-PRF-19500 and as specified herein.

4.2.1 Group E qualification. Group E qualification shall be performed herein for qualification or requalification only. In case qualification was awarded to a prior revision of the associated specification that did not request the performance of group E tests, the tests specified in 4.8.4 herein shall be performed on the first inspection lot to this revision to maintain qualification.

4.2.2 JANHC and JANKC devices. Qualification for shall be in accordance with appendix G of MIL-PRF-19500.

4.3 Screening (JAN, JANTXV, JANTX, and JANS levels only). Screening shall be in accordance with table IV of MIL-PRF-19500, and as specified herein. The following measurements shall be made in accordance with table II herein. Devices that exceed the limits of table I herein shall not be acceptable.

Screen (see table IV of MIL-PRF-19500)	Measurement		
	JANS	JANTX and JANTXV levels	JAN Level
3a	Temperature cycling	Temperature cycling	Temperature cycling (in accordance with MIL-PRF-19500 JANTX level)
(1) 3c	Thermal impedance (see 4.3.3)	Thermal impedance (see 4.3.3)	Thermal impedance (see 4.3.3)
9	I_{P1}	Not applicable	Not applicable
10	V_{POV} = 100 V dc at T_A = +25°C t = 48 hours	V_{POV} = 100 V dc at T_A = +25°C t = 48 hours	V_{POV} = 100 V dc at T_A = +25°C t = 48 hours
(2) 11	Subgroup 2 of table II herein; $\Delta I_{P1} \leq$ 5 percent of initial value	Subgroup 2 of table II herein	Subgroup 2 of table II herein
12	See 4.3.2	See 4.3.2	Not applicable
(2) 13	Subgroup 2 of table II herein; $\Delta I_{P1} \leq$ 5 percent of initial value.	Subgroup 2 of table II herein; $\Delta I_{P1} \leq$ 5 percent of initial value.	Not applicable

(1) Thermal impedance may be performed any time after sealing provided temperature cycling is performed in accordance with MIL-PRF-19500, screen 3 prior to this thermal test.
(2) When thermal impedance is performed prior to screen 13, it is not required to be repeated in screen 13.

4.3.1 Screening (JANHC or JANKC). Screening of die shall be in accordance with appendix G of MIL-PRF-19500. As a minimum, die shall be 100-percent probed to ensure compliance with subgroup 2 of group A (with the exception of thermal impedance).

4.3.2 Power burn-in conditions. Power burn-in conditions are as follows: I_R = 200 mA dc minimum; mounting and test conditions in accordance with method 1038 of MIL-STD-750, test condition B, T_{EC} = +75°C to +125°C for surface mount devices. T_A = room ambient as defined in the general requirements of 4.5 of MIL-STD-750.

4.3.3 Thermal impedance $Z_{\Theta JX}$ measurements for screening. The $Z_{\Theta JX}$ measurements shall be performed in accordance with method 3101 of MIL-STD-750, (V_R to be used in lieu of V_F). The maximum limit (not to exceed the table I, subgroup 2 limit) for $Z_{\Theta JX}$ in screening (table IV of MIL-PRF-19500) shall be derived by each vendor by means of statistical process control. When the process has exhibited control and capability, the capability data shall be used to establish the fixed screening limit. In addition to screening, once a fixed limit has been established, monitor all future sealing lots using a random five piece sample from each lot to be plotted on the applicable $\bar{X}$, R chart. If a lot exhibits an out of control condition, the entire lot shall be removed from the line and held for engineering evaluation and disposition.

a. I_M measurement current — 1 mA - 10 mA.

b. I_H forward heating current — .5 A - 1.0 A.

c. t_H heating time — 10 ms.

d. t_{MD} measurement delay time — 70 µs maximum.

4.4 For initial qualification or requalification. Group E qualification shall be performed herein for qualification or requalification only. In case qualification was awarded to a prior revision of the associated specification that did not request the performance of table II tests, the tests specified in 4.8.4 herein shall be performed on the first inspection lot to this revision to maintain qualification. Read and record data ($Z_{\Theta JX}$) shall be supplied to the qualifying activity on one lot (random sample of 500 devices minimum). Twenty-two serialized devices shall be sent to the qualifying activity for test correlation.

4.5 Thermal resistance. Thermal resistance measurement shall be in accordance with method 3101 of MIL-STD-750. Forced moving air or draft shall not be permitted across the device during heat. The maximum limit for $R_{\Theta JL}$ under these test conditions shall be $R_{\Theta JL}$ (max) = 250°C/W or $R_{\Theta JEC}$ = 100°C/W. The following conditions shall apply:

a. I_M 1 mA to 10 mA.

b. I_H 200 mA to 400 mA.

c. t_H 30 seconds minimum.

d. t_{MD} 70 μs maximum.

LS = lead spacing = .375 inch (9.53 mm) for non-surface mount and 0 inch for surface mount (see figure 4 below):

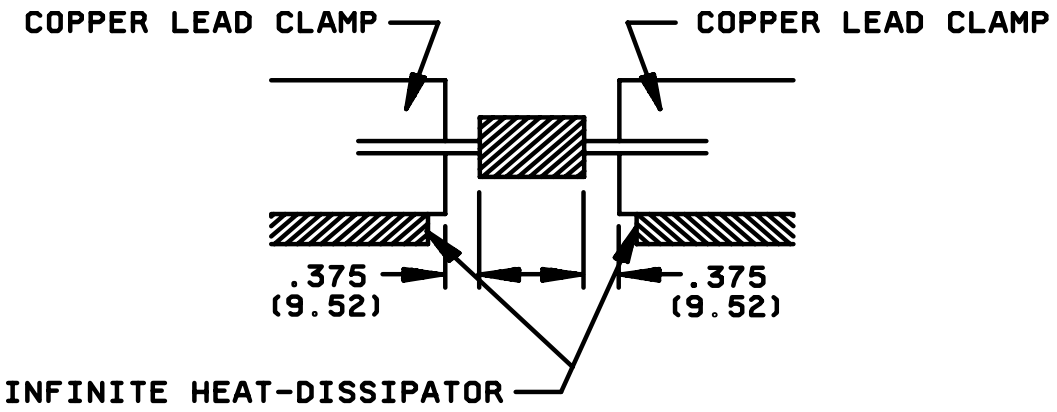


FIGURE 4. Mounting conditions.

4.5.1 For initial qualifications and re-qualifications. Read and record data in accordance with 4.8.4 herein and shall be included in the qualification report.

4.6 Temperature coefficient of regulator current. The temperature coefficient of regulator current shall be tested under the following conditions: (sampling plan: 22 devices, c = 0).

a. Test 1: V_S = 25 V dc, T_{L1} = -55°C, T_{L2} = +25°C, L = .375 inch (9.53 mm) (non-surface mount), L = 0 inch (surface mount) (see 3.3.2 and 4.8.3) with the maximum limit in accordance with column 8 of table II.

b. Test 2: V_S = 25 V dc, T_{L1} = +25°C, T_{L2} = +150°C, L = .375 inch (9.53 mm) (non-surface mount), L = 0 inch (surface mount) (see 3.3.2 and 4.8.3) with the maximum limit in accordance with column 9 of table II.

4.7 Conformance inspection. Conformance inspection shall be in accordance with MIL-PRF-19500, and as specified herein.

4.7.1 Group A inspection. Group A inspection shall be conducted in accordance with MIL-PRF-19500, and table I herein.

4.7.2 Group B inspection. Group B inspection shall be conducted in accordance with the conditions specified for subgroup testing in table VIa (JANS) and VIb (JAN, JANTX and JANTXV) of MIL-PRF-19500, and as follows. Electrical measurements (end-points) and delta requirements shall be in accordance table I, subgroup 2 herein.

4.7.2.1 Group B inspection, table VIa (JANS) of MIL-PRF-19500.

Subgroup	Method	Condition
B4	1037	2,000 cycles.
B5	1027	I_R = 200 mA dc, T_A = +125°C or adjusted as required to give an average lot T_J = +175°C. Marking legibility requirements shall not apply.
B6	3101 or 4081	$R_{\Theta JL}$ = 250°C/W .375 inch (9.52 mm) lead length (non-surface mount). $R_{\Theta JEC}$ = 100°C/W (surface mount).

4.7.2.2 Group B inspection, table VIb (JAN, JANTX, and JANTXV) of MIL-PRF-19500.

Subgroup	Method	Condition
B3	1027	V_{POV} = 100 V dc; T_A = +25°C; L = .375 inch (9.53 mm) (non-surface mount), L = 0 inch for surface mount.
B5		Not applicable.
B6	1032	T_A = +175°C.

4.7.3 Group C inspection. Group C inspection shall be conducted in accordance with the conditions specified for subgroup testing in table VII of MIL-PRF-19500, and as follows. Electrical measurements (end-points) and delta requirements shall be in accordance with table I, subgroup 2 herein.

Subgroup	Method	Condition
C2	2036	(Not applicable to surface mount devices); lead fatigue conditions: Test condition E; .062 inch (1.57 mm) lead restriction from case. Test condition A; 4 pounds, 15 seconds.
C5	3101	See 4.5.
C6	1026	V_{POV} = 100 V dc; T_A = +25°C; L = 0.375 inch (9.53 mm)(non-surface mount), L = 0 inch for surface mount.
C7	See 4.6 and 4.8.3	

4.8 Methods of inspection. Methods of inspection shall be as specified in the appropriate tables and as follows:

4.8.1 Knee ac impedance (Z_K) at test voltage V_K. To test for Z_K, a 90 Hz signal V_K (mod) with rms value equal to 10 percent of test voltage, V_K, is superimposed on the test voltage (see figure 5).

4.8.2 Regulator impedance (Z_S) at test voltage V_S. To test for Z_S, a 90 Hz signal V_S (mod) with rms value equal to 10 percent of test voltage, V_S, is superimposed on the test voltage (see figure 6).

4.8.3 Temperature coefficient of regulator current ($\propto I_S$). Temperature coefficient of regulator current shall be calculated as follows:

$$\propto I_S = \frac{I_P (T_{L2}) - I_P (T_{L1})}{I_P (T_L = +25°C)\Delta T_L} \times 100$$

4.8.4 Group E inspection. Group E inspection shall be conducted in accordance with the conditions specified for subgroup testing in table IX of MIL-PRF-19500. Electrical measurements (end-points) and delta requirements shall be in accordance with the applicable steps and footnotes of table I, subgroup 2 herein.

4.8.4.1 Group E inspection, table IX of MIL-PRF-19500.

	Subgroup	Method	Condition	Sampling plan
	E1	1051	500 cycles	45 devices, c = 0
*	E2	1037	6,000 cycles (see 4.3.2)	45 devices, c = 0
	E3	2101	Cross section; scribe and break	3 devices, c = 0
	E4	3101 or 4081	$R_{\Theta JEC}$ = 100°C/W (maximum) at zero lead length. +25°C ≤ T_R ≤ +35°C, at T_H ≥ 30 s. (surface mount only) (see 4.5)	22 devices, c = 0
	E4	3101 or 4081	$R_{\Theta JL}$ = 250°C/W (maximum) at .375 inch (9.53 mm) lead length +25°C ≤ T_R ≤ +35°C at T_H ≥ 30 s in still air (non-surface mount only) (see 4.5)	22 devices, c = 0
	E6	1020		3 devices, c = 0

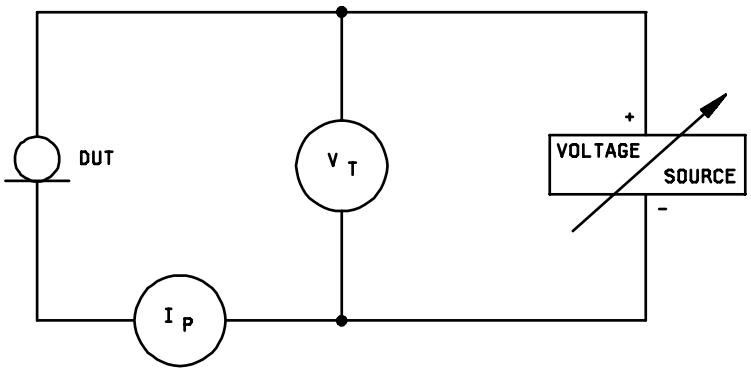
TABLE I. Group A inspection.

Inspection 1/	MIL-STD-750		Symbol	Limit 2/		Unit
	Method	Conditions		Min	Max	
Subgroup 1						
Visual and mechanical examination	2071					
Subgroup 2						
Regulator current		V_S = 25 V dc, t = 90 s or thermal equilibrium, T_L = +30°C ±3°C (see figure 5)	I_{P1}	Column 3	Column 4	mA dc
Limiting voltage		I_L = 0.8 I_p (min), col. 3 of table II (see figure 6)	V_L		Column 7	V dc
Reverse voltage		I_R = 200 mA	V_R		2.5	V dc
Thermal impedance	3101	See 4.3.3	$Z_{\Theta JX}$		25	°C/W
Subgroup 3						
Not applicable						
Subgroup 4						
Regulator impedance		V_S = 25 V dc; (see figure 7 and 4.8.2)	Z_S	Column 5		MΩ
Knee impedance		V_K = 6.0 V dc, (see figure 8 and 4.8.1)	Z_K	Column 6		MΩ
Subgroups 5 and 6						
Not applicable						
Subgroup 7						
Regulator current		V_S = 100 V dc, T = 90s or thermal equilibrium, T_L = +30°C ±3°C (see figure 5)	I_{P2}		Column 10	mA dc

1/ For sampling plan, see MIL-PRF-19500.
2/ Column references are to table II herein.

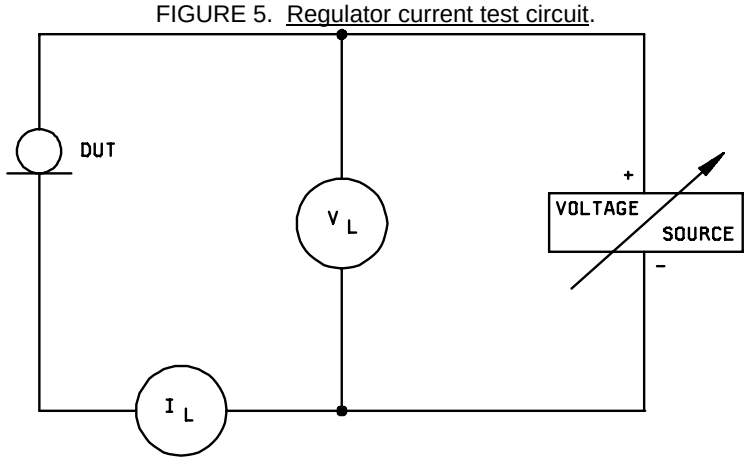
TABLE II. Electrical characteristics.

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8		Col 9		Col 10
Type (Electrical characteristics for "UR" and "-1" suffix devices are identical.)	I_{P1} Regulator current at V_S = 25 V (mA)			z_S minimum regulator impedance at V_S = 25 V	Z_K minimum knee impedance at V_K = 6 V	V_L maximum limiting voltage at I_L = 0.8 I_P (min)	αI_S maximum regulator current T_C at V_S = 25V -55°C +25°C		αI_S maximum regulator current T_C at V_S = 25V +25°C +150°C		I_{P2} regulator current (mA) at V_S = 100 V
							(%/°C)		(%/°C)		
	Nom	Min	Max	MΩ	MΩ	Volts	Min	Max	Min	Max	Max
1N5283-1	0.22	0.198	0.242	25.0	2.75	1.00	- .20	1.15	- .16	0.60	.27
1N5284-1	0.24	0.216	0.264	19.0	2.35	1.00	- .20	1.05	- .20	0.56	.30
1N5285-1	0.27	0.243	0.297	14.0	1.95	1.00	- .30	0.95	- .22	0.48	.33
1N5286-1	0.30	0.270	0.330	9.0	1.60	1.00	- .35	0.85	- .25	0.42	.36
1N5287-1	0.33	0.297	0.363	6.6	1.35	1.00	- .40	0.75	- .26	0.37	.40
1N5288-1	0.39	0.351	0.429	4.10	1.00	1.05	- .50	0.62	- .30	0.28	.47
1N5289-1	0.43	0.387	0.473	3.30	0.870	1.05	- .52	0.55	- .32	0.23	.52
1N5290-1	0.47	0.423	0.517	2.70	0.750	1.05	- .55	0.50	- .33	0.18	.57
1N5291-1	0.56	0.504	0.616	1.90	0.560	1.10	- .60	0.35	- .36	0.10	.68
1N5292-1	0.62	0.558	0.682	1.55	0.470	1.13	- .62	0.25	- .37	0.05	.75
1N5293-1	0.68	0.612	0.748	1.35	0.400	1.15	- .65	0.20	- .38	0.02	.82
1N5294-1	0.75	0.675	0.825	1.15	0.335	1.20	- .70	0.15	- .40	- .03	.91
1N5295-1	0.82	0.738	0.902	1.00	0.290	1.25	- .72	0.07	- .41	- .07	.99
1N5296-1	0.91	0.819	1.001	0.880	0.240	1.29	- .76	0.0	- .42	- .10	1.10
1N5297-1	1.00	0.900	1.100	0.800	0.205	1.35	- .78	0.05	- .44	- .10	1.21
1N5298-1	1.10	0.990	1.210	0.700	0.180	1.40	- .80	-.10	- .46	- .10	1.33
1N5299-1	1.20	1.08	1.32	0.640	0.155	1.45	- .83	-.15	- .47	- .10	1.45
1N5300-1	1.30	1.17	1.43	0.580	0.135	1.50	- .85	-.20	- .48	- .10	1.57
1N5301-1	1.40	1.26	1.54	0.540	0.115	1.55	- .88	-.20	- .49	- .10	1.69
1N5302-1	1.50	1.35	1.65	0.510	0.105	1.60	- .90	-.20	- .50	- .10	1.81
1N5303-1	1.60	1.44	1.76	0.475	0.092	1.65	- .90	-.20	- .50	- .10	1.92
1N5304-1	1.80	1.62	1.98	0.420	0.074	1.75	- .92	-.20	- .51	- .10	2.18
1N5305-1	2.00	1.80	2.20	0.395	0.061	1.85	- .95	-.20	- .52	- .10	2.42
1N5306-1	2.20	1.98	2.42	0.370	0.052	1.95	- .96	-.20	- .52	- .10	2.66
1N5307-1	2.40	2.16	2.64	0.345	0.044	2.00	- .98	-.20	- .53	- .10	2.90
1N5308-1	2.70	2.43	2.97	0.320	0.035	2.15	-1.0	-.20	- .53	- .10	3.27
1N5309-1	3.00	2.70	3.30	0.300	0.029	2.25	-1.01	-.20	- .53	- .10	3.63
1N5310-1	3.30	2.97	3.63	0.280	0.024	2.35	-1.02	-.20	- .54	- .10	3.99
1N5311-1	3.60	3.24	3.96	0.265	0.020	2.50	-1.03	-.20	- .54	- .10	4.36
1N5312-1	3.90	3.51	4.29	0.255	0.017	2.60	-1.04	-.20	- .55	- .10	4.72
1N5313-1	4.30	3.87	4.73	0.245	0.014	2.75	-1.05	-.20	- .55	- .10	5.20
1N5314-1	4.70	4.23	5.17	0.235	0.012	2.90	-1.06	-.20	- .55	- .10	5.69



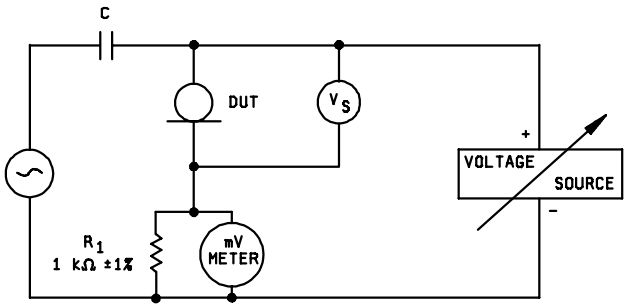
NOTES:
1. Adjust voltage source so that V_S = 25 V dc.
2. Measure current I_P.
3. The device is acceptable if the current falls within the limits specified.
4. The ammeter shall represent essentially a short-circuit to the terminals between which the current is being measured. If not, the voltmeter reading shall be corrected for the drop across the ammeter.

FIGURE 5. Regulator current test circuit.



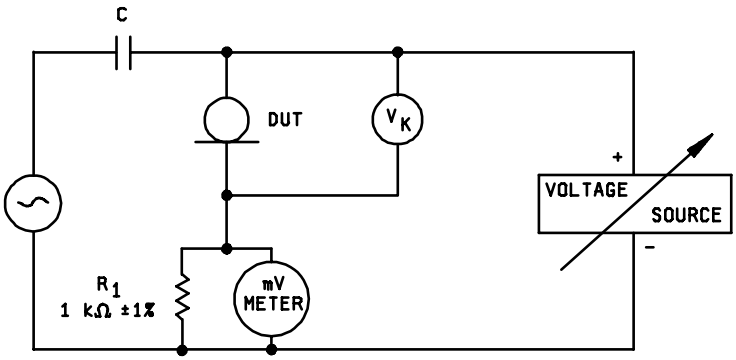
NOTES:
1. Adjust current source so that $I_L = 0.8\ I_P$ (min).
2. Measure voltage V_L.
3. The device is acceptable if the voltage is less than the limit specified.
4. The ammeter shall represent essentially a short-circuit to the terminals between which the current is being measured. If not, the voltmeter reading shall be corrected for the drop across the ammeter.

FIGURE 6. Limiting voltage test circuit.



NOTES:
1. Adjust voltage source so that V_S = 25 Vdc.
2. Apply an ac signal of 2.5 Vrms at 90 Hz through an isolating capacitor C.
3. Measure the ac rms voltage.
4. $z_S = V_S$ mod x ($R_1 \div$ V ac) where V_S mod equals ac signal for note 2 and V ac equals the voltage across R_1.
5. Device is acceptable if the regulator impedance meets the specified minimum limit.

FIGURE 7. Regulator impedance test circuit.



NOTES:
1. Adjust voltage source so that V_K = 6.0 Vdc.
2. Apply an ac signal of 0.6 Vrms at 90 Hz through an isolating capacitor C.
3. Measure the ac rms voltage.
4. $z_K = V_K$ mod x ($R_1 \div$ V ac) where V_K mod equals ac signal for note 2 and V ac equals the voltage across R_1.
5. Device is acceptable if the knee impedance meets the specified minimum limit.

FIGURE 8. Knee impedance test circuit.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The notes specified in MIL-PRF-19500 are applicable to this specification.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of this specification.

b. Issue of DoDISS to be cited in the solicitation and if required, the specific issue of individual documents referenced (see 2.2.1).

c. The lead finish as specified (see 3.6).

d. Type designation and quality assurance level.

e. Packaging requirements (see 5.1).

6.3 Suppliers of die. The qualified die suppliers with the applicable letter version (example JANHCA1N5283) will be identified on the QPL.

JANC ordering information	
PIN	Manufacturer
1N5283-1 through 1N5314-1	43611
	JANHCA1N5283 through JANHCA1N5314 or JANKCA1N5283 through JANKCA1N5314

6.4 Substitutability. Non dash-one devices have been deleted from this specification. Dash-one devices are a direct substitute for non dash-one devices and are preferred.

6.5 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturer's List (QML No.19500) whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from Defense Supply Center, Columbus, ATTN: DSCC-VQE, P.O. Box 3990, Columbus, OH 43216-5000.

6.6 Changes from previous issue. The margins of this specification are marked with asterisks to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

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(Project 5961-2640)

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3. **DOCUMENT TITLE**
SEMICONDUCTOR DEVICE, DIODE, SILICON, CURRENT REGULATOR, TYPES 1N5283-1 THROUGH 1N5314-1, AND 1N5283UR-1 THROUGH 1N5314UR-1 JAN, JANTX, JANTXV, JANS, JANHC, AND JANKC

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

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8. PREPARING ACTIVITY

a. Point of Contact Alan Barone	b. TELEPHONE Commercial 614-692-0510 DSN 850-0510 FAX 614-692-6939 EMAIL alan.barone@dla.mil
c. ADDRESS Defense Supply Center, Columbus ATTN: DSCC-VAC, P.O. Box 3990 Columbus, OH 43216-5000	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Standardization Program Office (DLSC-LM) 8725 John J. Kingman, Suite 2533, Fort Belvoir, VA 22060-6221 Telephone (703) 767-6888 DSN 427-6888

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